

LATEST SMARTPHONE, TABLET AND APP REVIEWS

ANDROID

ADVISOR

ISSUE
15

GOOGLE  SPECIAL

GOOGLE PHOTOS

Every photo you've ever
taken, available anywhere



 **Android M** 

Why we like it and how to get it today

Welcome...

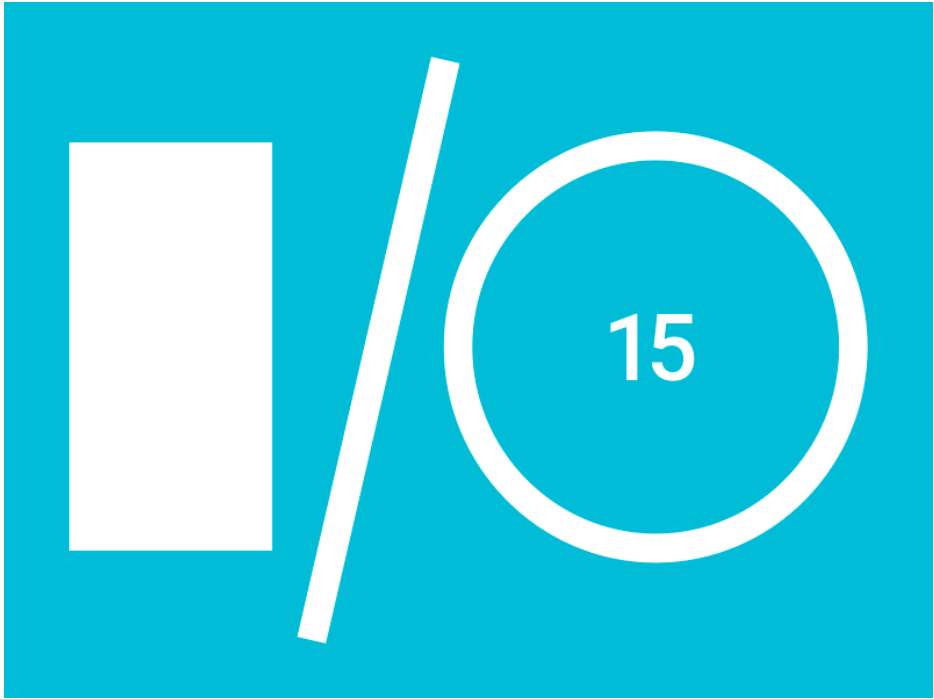
As expected, at the end of May during its annual I/O developer conference, Google took the wraps off the next version of its Android operating system, Android M.

M isn't a major upgrade over Lollipop, but it includes some nice fixes and desirable new tricks. For example, a new Doze mode should enable battery life to last much longer in Android, perhaps even twice as long. We've outlined our favourite new features in Android M on page 9, and if you can't resist giving it a try, head to page 13.

The big news from Google I/O was that Google Photos would now offer unlimited online storage for high-resolution photos and video to anyone - whether they're running Android or iOS or on a PC. Theoretically, that means you could store every single photo or video you've ever shot in a single, easy-to-manage online database for accessing wherever you are and on whatever device. We talk more about Google Photos on page 21.

Plenty more was discussed at I/O, too, including the unveiling of Google's new mobile payment service Android Pay, and updates on Google Cardboard, Android Wear, Google Now and more. Turn the page for our complete I/O round-up.

As always, we hope you've enjoyed this issue of Android Advisor. Feel free to send us your feedback via facebook.com/AndroidAdvisorUK or email marie_brewis@idg.co.uk.



GOOGLE I/O 2015 round-up

Google hypes Android M, Android Pay, Google Photos and more at I/O 2015

Google kicked off its annual I/O developer conference at the end of May in San Francisco, showing off a new version of Android, a VR camera rig, numerous developer resources, and a lot more besides in an opening keynote that took up the better part of two hours.

Senior vice president of product Sundar Pichai emceed the event, which Google says attracted 6,000-plus developers and featured presentations



from engineering vice president David Burke, engineering vice president Jen Fitzgerald, Android Wear director David Singleton, director of product management Aparna Chennapragada, and others.

Much of what had been rumoured before the show did, indeed, appear on stage at the Moscone Center - including the aforementioned new Android version, Google Photos, Android Pay and more. But there were conspicuous absences, as well - Google didn't mention its enterprise-focused products like Android and Apps for Work, nor the rumoured Project Fi wireless service, or the Project Ara modular smartphone.

Android M

Arguably the biggest piece of news was the announcement of Android M, which was immediately made available to developers and will start to appear on user devices later this year.

Android M isn't going to make too many big waves on its own - it doesn't overhaul the interface design or radically change the way people interact with the

device. But it does bring minor but helpful tweaks such as granular app permission settings (which allow users to deny or approve specific permissions, such as location tracking or Wi-Fi information, from each app), and Chrome custom tabs, which uses pre-loading and deep app integration to offer a more native-like mobile web experience.

Android Pay

Google rolled out a new mobile payment infrastructure called Android Pay at I/O 2015. It's similar to Apple Pay and Google's earlier attempt at mobile payments, Google Wallet, in that it's an NFC-based system where you wave your phone at a properly equipped point of sale, but it adds an open infrastructure and improved tap-to-pay capability.

Google says there are 700,000 stores in the US that can accept Android Pay - which sounds like a large-ish number, until you remember that that's only 18 percent of all American retailers, based on statistics from the National Retail Federation. Perhaps a payment war between Apple and Google





will produce a renaissance through aggressive competition, but for now mobile payment still isn't the show-stopper tech companies seem to think it is.

Google Photos

It wasn't an announcement that sounded like it was going to make a great splash at the outset - Google largely just removed the photo-management features from Google Plus and made them into a standalone product. The kicker, however, was the news that Google Photos will offer an unlimited amount of storage for free, so long as your photos are 16Mp or less and your videos are limited to 1080p (higher resolutions will be compressed).

The usual Google-flavoured privacy qualms apply, of course, as does the frequently cited nostrum about free products generally signifying that you are the product, not the consumer. But the rash of speculation that this spells big trouble for services like Dropbox doesn't seem entirely nonsensical.

Cardboard

It's tough to avoid the impression that Google's very pleased with itself for coming up with Cardboard -

as a company known for its place on the blistering edge of high tech, the change of gears showing off a simple cardboard frame for using smartphones as VR devices is a big one.

The updated version (Cardboard was originally announced at Google I/O 2014) allows it to handle larger phones, of up to 6in in diagonal screen size and support for iPhones, to boot. Google showed off a video of a classroom of schoolchildren enjoying a virtual field trip via Cardboard during the event.

Jump

To go with the new virtual reality viewing devices, Google announced a nifty 16-unit system called Jump, which will enable users to create their own VR content and post it to YouTube. GoPro is making a version, which will go out to carefully selected users in July for a six-month pilot project.

It's certainly impressive, but it's also not something you'll be able to buy any time soon, and the logistics of creating content via Jump and uploading it to YouTube are not entirely clear.





Android Wear

Google talked up its recent update of its Android Wear platform with new gesture controls, including the ability to scroll through menus with the flick of a wrist and draw emojis with a finger. Google also rolled out integration with Uber and several other companies, enabling users to do things like summon a ride with a quick voice command.

Project Brillo/Weave

Brillo is a stripped-back version of Android designed to run on low-powered devices. Together with its new machine-to-machine comms standard, Weave, Brillo represents a major Google push into IoT.

Google Now

It knows you even more intimately now - Google demonstrated some impressive new technological breakthroughs in Google Now, including natural language processing for easier voice interface and a feature called What's on Tap that displays info based on whatever you're doing at the time.



Android M:

10 best new features

Doze, Now on Tap, Android Pay and more - 10 things that make us excited about Android M's upcoming release

Now Google has let loose the Developer Preview of Android M, we've been able to spend some time checking it out. Here are the 10 best Android M new features.

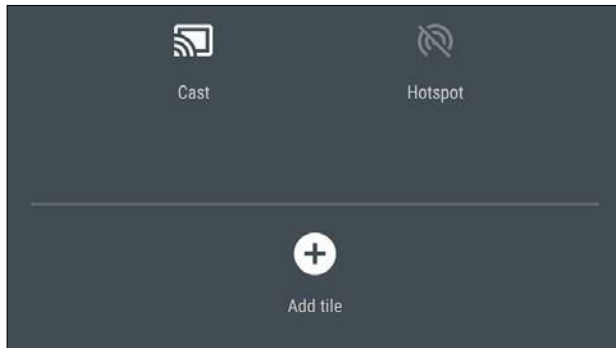
Doze mode

We all want better battery life and any improvement is good. Indeed, manufacturers such as Samsung have angered some customers by making the battery non-removable. Well that might not be such a big deal thanks to Doze mode in Android M. This monitors when the device isn't being used to put

it into a deep sleep that uses less power and can double your battery life.

Customise Quick Settings

We love Android Lollipop and one of the best things about Google's OS is the way you can change things around exactly how you like. However, Lollipop doesn't let you customise the Quick Settings to the ones you want or to a layout that suits you. The new SystemUI Tuner in Android M lets you do exactly that, hallelujah!



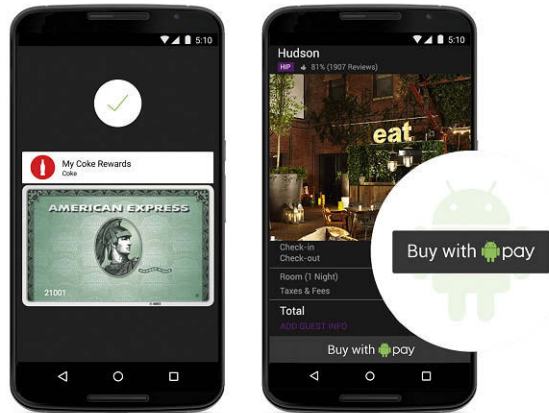
Quickly uninstall apps

A small but handy change is the ability to uninstall apps from the home screen. You now get the choice between simply removing the shortcut/icon or uninstalling the app from the device entirely.

Now on Tap

Google Now is a great feature of Android and it gets even better in Android M. Now on Tap means you can long-press the home button wherever you are to call up Google Now. Better still, you don't need to navigate away from the app you're using and it

will already have a good idea of what help you need based on what you've been doing - for example, directions to a location after chatting to a friend about meeting up.



Android Pay

We're still a little way off mobile phone payments being the norm, but Android M will be part of the drive toward it. Like Apple and Samsung, Google has announced its own contactless payment system. Android Pay will be baked into Android M, allowing you to make purchases with a simple tap (via NFC) without even opening an app.

Fingerprint scanner support

Numerous devices already feature fingerprint scanners, but Android M is the first Google OS to natively support them. This means you'll be able to use your fingerprint to authorise payments via Android Pay and confirm Play store purchases. Developers can also use the functionality within their own apps.

App permissions

One annoying thing about Android is that downloading an app requires agreeing to all its permissions, which might include things you don't agree with, such as allowing a runner game access to your contacts. Android M changes this, with the ability to pick and choose which permissions you're happy with for each individual app. You'll also be able to accept or deny a specific permission as and when an app requests it.

Direct Share

If you send links, photos or files to the same contacts then Android M will start adding them to the Share menu to speed up the process. It's a bit like having favourite contacts when you open the Dialler.

Better volume control

Not only is Do Not Disturb (DND) part of Quick Settings in Android M, the volume control has been tweaked for the better. You can now easily control the volume of calls, notifications and alarms with three separate sliders - simple but effective.



USB Type-C

Okay, it's a hardware feature, but Android M supports USB Type-C - and that is good news for future devices. You can plug it in either way around, it will charge your device quicker and even allow you to charge other devices.



Android M: How to get it now

If you own a Nexus 5, 6, 9 or Player, here's how to download the Developer Preview today

It's unlikely that the final version of Android M will be available to consumers until November 2015 at the earliest, when it will first appear on the new Nexus 5. However, if you have a Nexus 5, 6, 9 or Player and you're desperate to get your hands on Android M, you can download the Developer Preview today. Here's how to install Android M now.

It's important to note that this is very early software and the Android M Developer Preview is intended for developers only. It is going to be buggy and you are going to find some problems with it. If you just want to take a peek, you can of course

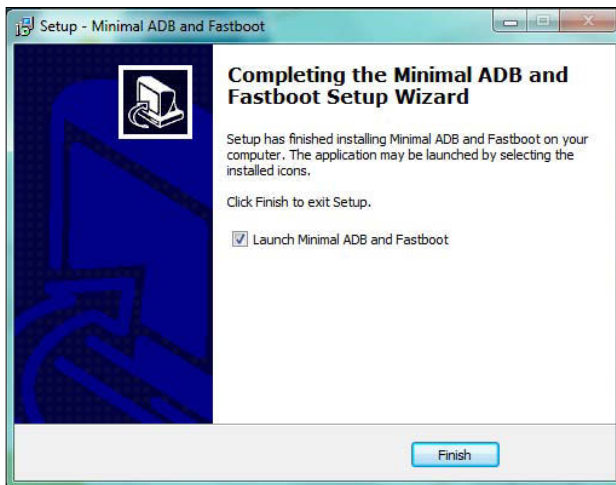
reinstall Android Lollipop - we'll tell you how at the end of this article.

Be warned that manually installing Android M is not for novice users, and it's quite possible to brick your device if you don't know what you're doing. It's important to back up any data installed on your phone or tablet before you begin since this will be lost in the process.

Below we explain how we installed M on our Nexus 6; follow our advice at your own risk - Android Advisor takes no responsibility for damaged devices.

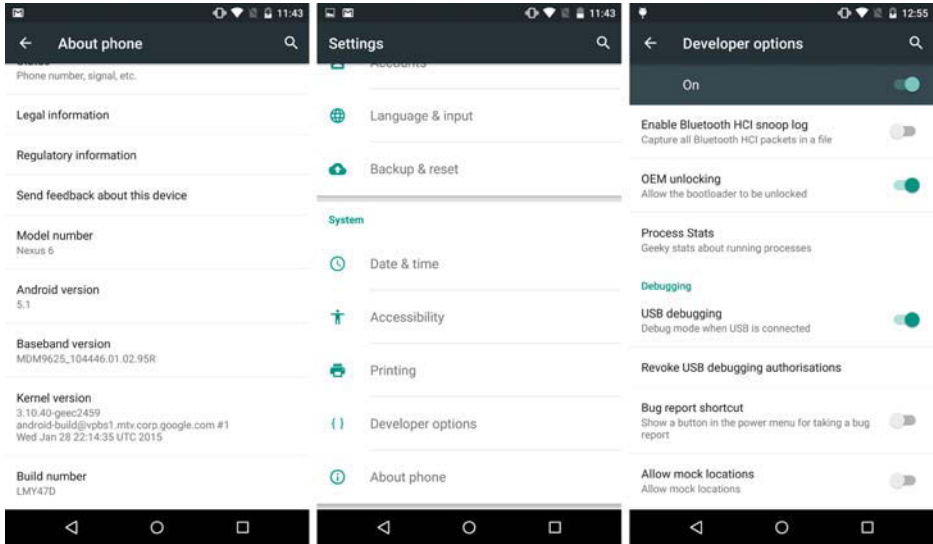
How to get Android M now

Step 1. On a Windows PC install Minimal ADB and Fastboot. You can download it from this XDA-Developers thread: tinyurl.com/lmstqa4.

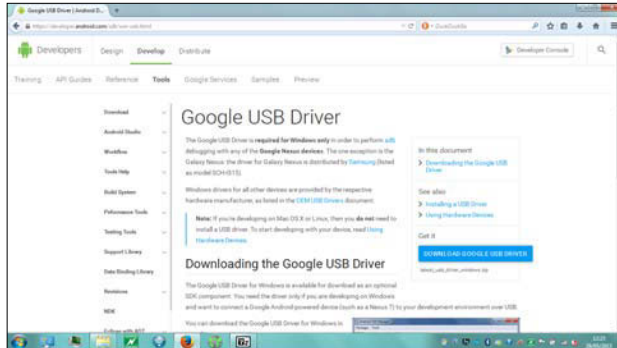


Step 2. Download the appropriate Android M installer for your device, which you'll find on the

Step 4. On your Nexus phone or tablet open Settings, About phone/tablet and tap on Build Number seven times. This will unlock a hidden Developer Options menu within Settings. Open Developer Options and enable USB debugging and OEM Unlock.



Step 5. Plug your Nexus device into your Windows PC via USB and download the Google USB Driver (tinyurl.com/3y32nw9). Extract the contents of the Zip file to a safe place, then click on Start, Devices and Printers, right-click on your phone or tablet and choose Properties. Open the Hardware tab, then choose the top entry under Device Functions and click on Properties. Update the driver, pointing Windows to the Google USB driver you've just downloaded. A prompt will appear on your device's screen to 'Allow USB debugging'; tick the box to 'Always allow from this computer', then press Ok.

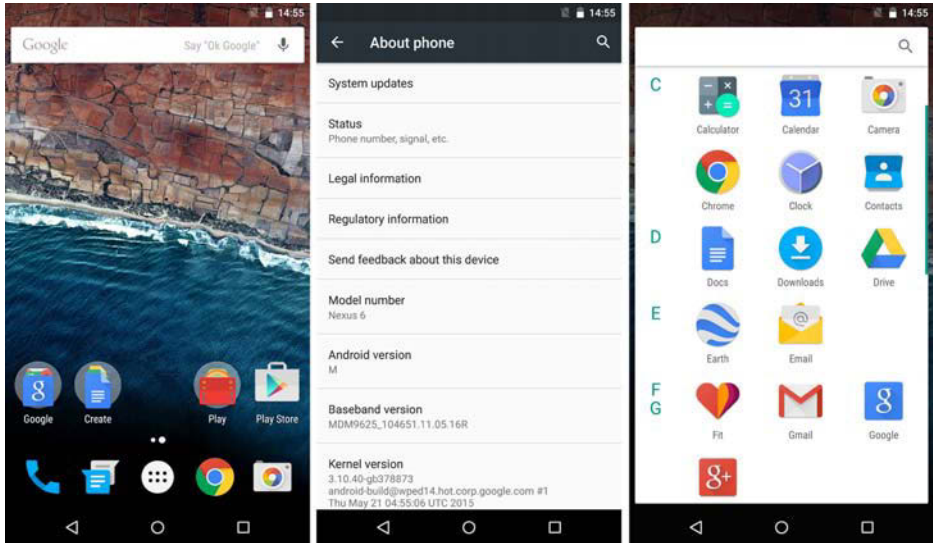


Step 6. Now you're ready to flash Android M on to your device. If you're sure it's been backed up properly (you will lose everything otherwise), launch Minimal ADB and Fastboot. Type **adb reboot-bootloader** and hit Enter. This will boot your device into Fastboot mode (which can also be achieved by switching it off and then simultaneously holding down the power, volume up and down buttons).

Step 7. Scan the information on the device screen for LOCK STATE. If this reports that the phone or tablet is unlocked move on to step 8; if it is locked, in ADB type **fastboot oem unlock** and hit Enter. Use the volume button to select Yes, then use the power button to confirm your choice.

Step 8. Technically, flashing Android M should now be a case of typing **flash-all** and hitting Enter. When you then reboot the phone or tablet you'll be greeted with Android M.

Except this didn't work on our Nexus 6, and we received an error message that the update package was missing system.img before it aborted the process. If you get the same error, go to step 9.



Step 9. In order to make Minimal ADB and Fastboot see those files, we had to go back to the files we extracted from our Android M installer in step 3. Within those files is another Zip file, and it's in here that you'll find the missing system.img file. Extract this Zip file, then copy its contents into C:\Program Files (x86)\Minimal ADB and Fastboot.

Step 10. Rather than using the flash-all command you'll need to manually install each file. In Minimal ADB and Fastboot we entered the following commands to successfully get our Nexus 6 running Android M:

fastboot flash bootloader bootloader-shamu-moto-apq8084-71.11.img

(This is for the Nexus 6 - the filename here will differ for the Nexus 5, 9 and Player.)

[Hit Enter]

fastboot flash radio radio-shamu-D4.01-9625-05.16+FSG-9625-02.94.img

(Again this is for the Nexus 6 - the filename here will differ for the Nexus 5, 9 and Player.)

[Hit Enter]

fastboot reboot-bootloader

[Hit Enter]

fastboot flash recovery recovery.img

[Hit Enter]

fastboot flash boot boot.img

[Hit Enter]

fastboot flash system system.img

[Hit Enter]

fastboot flash cache cache.img

[Hit Enter]

fastboot erase userdata

[Hit Enter]

fastboot flash userdata userdata.img

[Hit Enter]

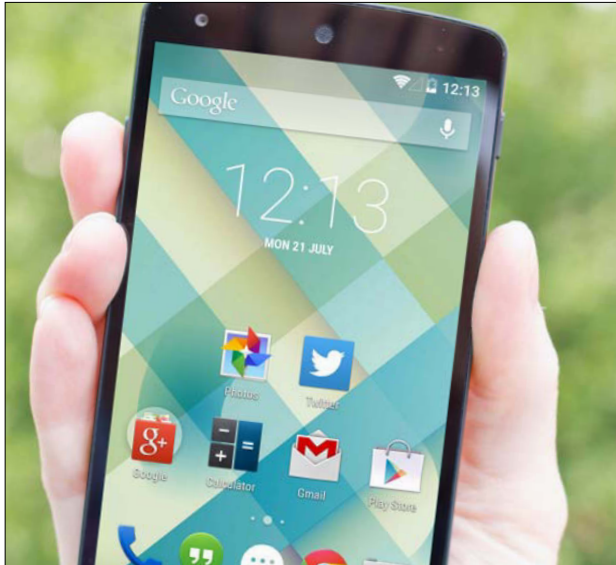
fastboot reboot

[Hit Enter]

The device should then restart running Android M.

How to uninstall Android M

To uninstall Android M and revert to your previous OS, simply download the appropriate system image from developers.google.com/android/nexus/images and repeat the instructions above. Note that you'll first need to clear out the files from Minimal ADB and Fastboot that you added earlier.





Google Photos

Google Photos: How to back up and share all your photos for free

Google's cross-platform photo- and video app will back up your entire library for free

Cloud storage is more important today than ever before, especially for those of us that regularly back up our photos and videos.

Google Photos will automatically and instantly (if there's an active internet connection) back up all photos and videos that you take on your phone.

Unlike other services, Google boasts that the images and videos stored are full-HD, not compressed/low-resolution copies. Instead of saving your entire library to the Google Photos app, all images displayed are grabbed from the Photos server - if you think this translates to long image

loading times, you'd be wrong. Google Photos was demonstrated during the I/O event for everyone to see, and images loaded up in full-HD as soon as they were opened.

The best part? It's available not only for Android, but iOS and the web too. It's also completely free, no matter how many photos you upload.

“

Google Photos is available not only for Android, but iOS and the web too - and it's completely free!

”

Automatic photo organisation

Google Photos learns what's important to you and then organises your photos based upon that information. The aim is to let you enjoy taking photos without having to worry about trying to organise them all, and if the demo we saw today is any indication, Google has succeeded. It'll sort your photos over time based on places, people and things that matter most to you - and the best part is that you don't need to tag anyone or anything, it's all done for you.

The facial-recognition feature is the most impressive method of organisation, as you can select a person and see all photos in your library that include them, from the moment they were born to modern day. However, it seems that the facial-recognition feature isn't available in all countries yet, and the UK is included in that list. You can also search using keywords, so you could type “football” to see all the photos taken at a football match.

Layout wise, the most recent photos are at the top but you can pinch to zoom out from days > weeks > months > years and back again, much like you can using Apple's Photos app.

Share photos with friends

Sharing photos with friends is almost too easy with Google Photos. You can select a single photo by pressing and holding on it, or you can select a group of photos by pressing and holding one photo, then dragging it over other photos you want to include. Once all the photos are selected, tap Share and "Get link" and you'll be given a URL.

This URL can be sent to any friend on any platform without the need for the Google Photos app. It'll open in their browser, where they'll be able to view the selected photos from your library in full-HD instantly. If the person you're sharing images with has a Google account, they can add the photos to their personal library with the click of a button.

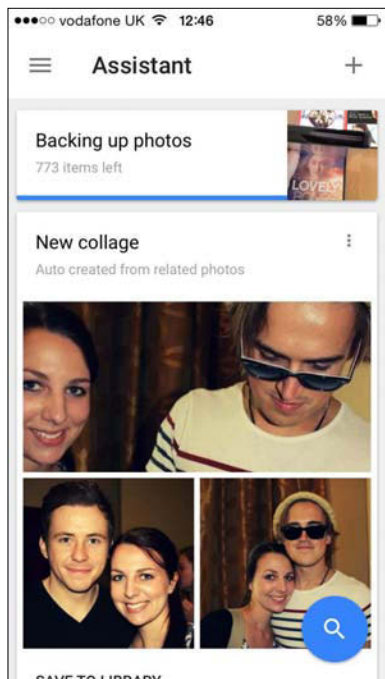
“

Sharing photos with friends is almost too easy with Google Photos

”

Edit photos and create collages

Google Photos not only lets you back up and browse your entire photo and video library, it also lets you edit your collection. It offers fairly standard editing tools, including Light, Colour, Pop and Vignette, and if you don't want to manually edit, there's always the option to automatically enhance the photo. It works



well, updating as you adjust the levels so you can fine-tune your edit.

There's also the option to add a number of Instagram-esque filters to your photo. Though we're not generally fans of filters, they have quite a few to choose from for those who are partial to them. You can also adjust the intensity of the filter, a feature welcomed by many.

It's also worth noting that if you edit a photo in the Google Photos app and save it, you'll be asked whether you want to update the photo in your stock image gallery (Photos

for iOS users). It's great being able to edit the photo in Google Photos and have the edit applied to the original photo too, and saves a lot of time when enhancing a group of photos. The same can be said when deleting photos – if you delete a photo from Google Photos, the corresponding photo in your stock image library will be deleted.

Google also boasts some pretty cool tools that will generate collages, GIFs and edits of photos in your library automatically. Taken a burst of photos with friends doing weird faces? Google Photos will take them all and put them into a single GIF, ready to share. It also suggests edits of photos – we had a photo of London Bridge in our library and the app automatically applied a B&W filter to it.

You can also manually create GIFs, movies, stories, animations and collages by selecting a group of photos in the Google Photos app and tapping the '+' icon in the top right hand corner. It's very simple to use but has great results.

“

You could theoretically store every photo and video you've ever taken in a single well-organised library

”

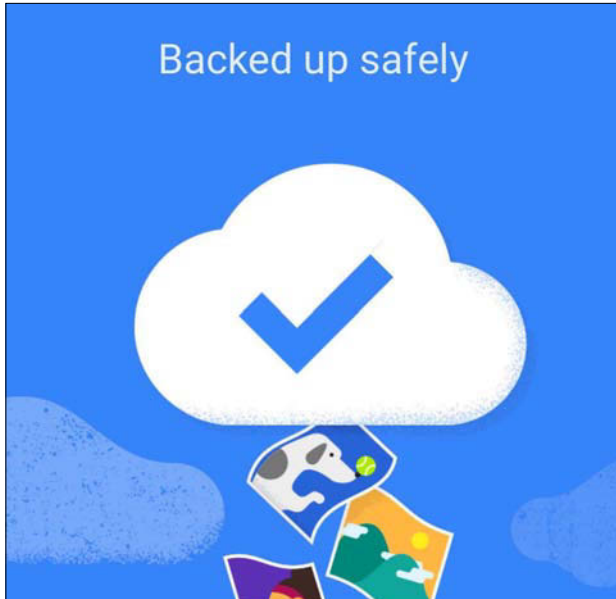
Unlimited backup of photos and videos

We've saved the best bit of information until last. As we mentioned earlier, Google is offering unlimited backup of photos and videos via Google Photos. Google is the first big company to offer this kind of service, as the likes of Apple, Dropbox and Microsoft all charge for photo and video storage. This means that you could theoretically store every photo and video you've ever taken in a single well-organised library without ever having to spend a penny.

That is, of course, if you adhere to Google's guidelines - the company has a limit of 16Mp photos and 1080p HD videos, but that's fair enough if you're only storing original-resolution photos and videos.

How to back up your photos for free

To use the Google Photos app to back up and share your photos you first need to install the app on your phone or tablet – it's available now on Google Play, the App Store and on the web (for uploading images from your PC). For this tutorial, we'll be using an iPhone 6 Plus - just to prove how easy it is from iOS.



Once you've downloaded the app, open it and you'll be greeted with a Google-esque animation explaining the purpose of Google Photos. You can watch this, or ignore it and tap "Get Started".

If you've never signed into a Google account on your smartphone before, you'll be prompted to log

Back up your photos & videos

Sync this device with your Google Photos library to search, edit, delete and share from any device. [Learn more](#)

Backup & sync

Use Google account lewis.painter@googlemail.com

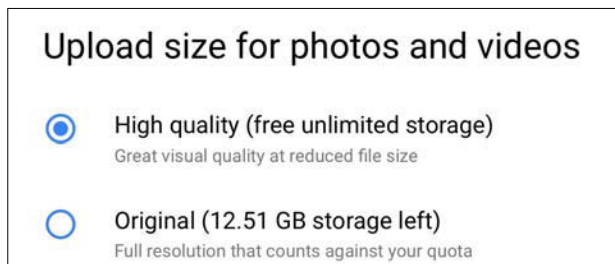


Use mobile data to back up

When Wi-Fi is unavailable

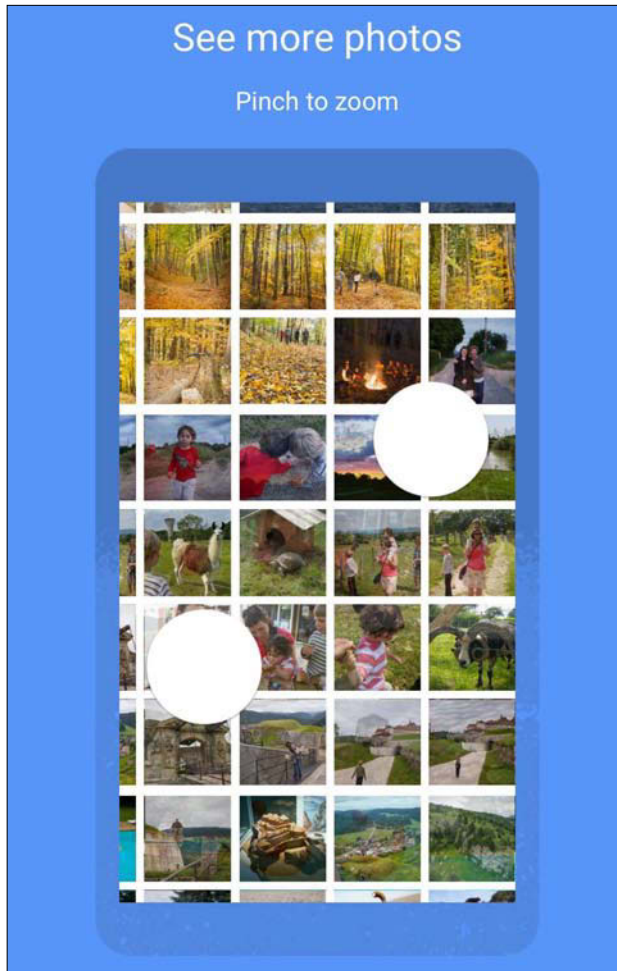


in. If you have, you should automatically be logged in to your Google account. Make sure that “Backup & sync” is selected or your photos won’t be backed up, and decide whether you want to upload your photos and videos over a cellular connection. Backing up over a cellular connection is great because photos are instantly backed up, but the downside is that it’ll eat into your data allowance – a bad move for people with data limits on their contracts. Once you’ve decided, tap continue.



The next page will ask you whether you want to store high quality images and videos, or use your original files. This is a very important decision – the high quality option will reduce your file size without effecting quality, and the original files option will, as stated, upload the original files with no reduction. If you want to take Google up on their offer of free and unlimited storage, select high quality – if you select original files, it’ll eat up your Google Drive data allowance. Once you’ve made your decision, tap continue.

On the next page, you’ll be given an introduction on how to navigate around Google Photos and use certain features. The main points to take away here are that you can:



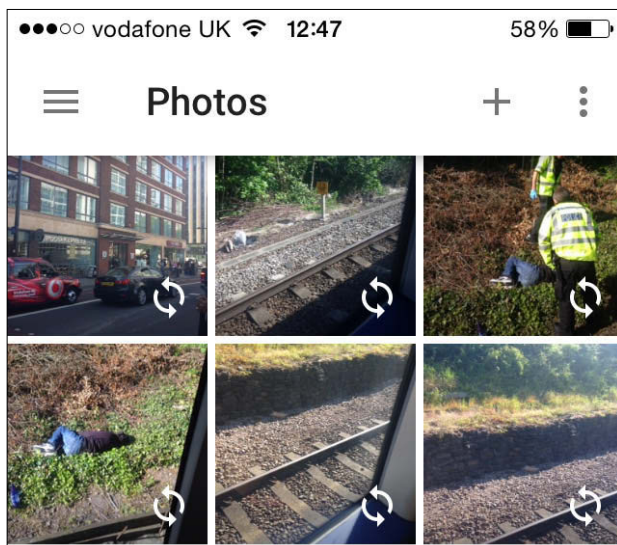
- Pinch to zoom in and out of your photo collection
- Select multiple photos easily by tapping, holding and dragging a single photo over the images you want to select
- Swipe left and right to navigate between menus

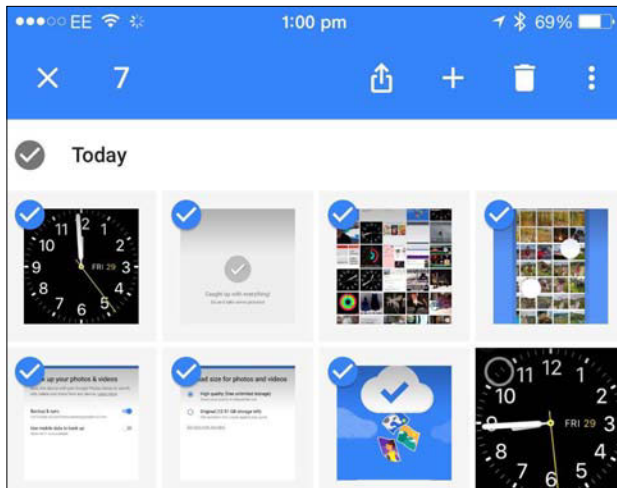
- Use search to easily find your photos

Once you're done, tap the tick to exit the setup and start using the app.

The app will then ask for permission to access your photo library, which you of course allow. Then your entire photo and video library will be brought into the Google photos app, where you're free to browse, edit and share to your hearts content.

Photo backup should also start immediately, and you can see the status of your backup along with any collages, edits or GIFS that Google Photos has created from photos in your library. Icons will overlay your photos displaying the current status, with a red cloud indicating that it isn't backed up, a sync icon to represent that it's currently being backed up and if there's no icon at all, it has already been backed up.





How to share images from your library

So, what about sharing photos from your vast library? It's a lot easier than you might think - especially if you're looking to share a collection of photos with people.

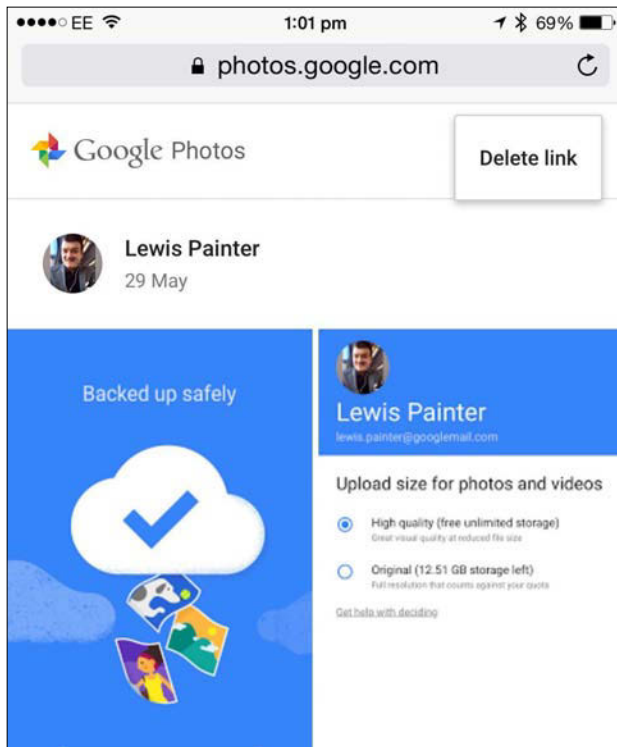
To select a photo to share, simply tap and hold to select it. Once you've selected a photo, you can drag your finger across any other photo to add it to the selection.

Once you've selected the photos you want to share, tap the Share button (3 dots on Android, box with arrow on iOS) and decide where you want to share your collection – Facebook, Twitter, Tumblr, etc. You may also notice another option entitled “Copy link to clipboard” which is the best way to share collections of photos with specific people without having to put them on Social Media for the whole world to see.

If you tap Copy link to clipboard, Google Photos will generate a unique link for you to send to your

friends and family which contains the photos you wanted to share with them in full HD. The best part is that they don't need a Google account or Google Photos installed, as it opens in browser. From there, they can save the photos manually to their phone/ computer or if they have a Google account, save the photos to their own library.

But what if you only want to share your photos for a limited time? Or if a link to an album of personal photos has been leaked? Not to worry, just navigate to the Shared Links menu in the Google Photos app, tap the three dots next to the album you want to delete, and tap "Delete link".





Android Pay: When will it come to the UK?

All the talk of Android Pay at I/O concerned US outlets, so what's the deal with Android Pay in the UK?

At its I/O conference this May Google announced a series of exciting new innovations, including Android Pay. This service is set to replace Google Wallet and will allow Android users to pay for a variety of products and services using just their NFC-equipped phones. It's obviously the search giant's version of the already announced Apple Pay and Samsung Pay, the former of which is starting to see adoption in parts of the US. So far the details of when the service will be available are somewhat sketchy, but we will break down the most up-to-date information for you.

When will the UK get Android Pay?

The short answer to this is simply that we don't know. At present all Google has said is that Android Pay will be coming in the next few months, with this seemingly applying to the US rather than the UK. At the Google I/O presentation all of the companies listed as partners - either banks, shops, or mobile phone carriers - were US-based, and there was no mention of a UK or European version. Google hasn't exactly covered itself in glory in this area either, with its Google Wallet service, which originally launched in 2011, never making it to these golden shores.

This time around things could be different. Mobile payments are seen as a potentially huge market by the main technology firms, and with Apple and Samsung already vying for position, it would seem foolish for Google to restrict its efforts to the US alone. Apple is setting up a dedicated Apple Pay team in the UK, which could make it the first to make it into the wild. Samsung has confirmed that its mobile payments service will be available in the US and Korea this summer, with plans for it to roll out in the UK, Europe and China in due course.

Is political red-tape holding things up?

Another possible reason for the delay in mobile payment systems being released in the UK and Europe is the proposed amendments to the laws governing these practices. Last September it was reported that the European Union Council of Ministers was considering new legislation that would impose restrictions on the way mobile payments could function, with a particular emphasis on security. This Payment Services Directive in the EU

proposal outlined the need for ‘strong customer authentication’ and that providers should require licences to operate within the EU. As with all legislation changes across such a varied territory, it can be assumed that discussions will take time, and could mean it is several months before we are able to pay for our coffee with our phones.

Why should we be excited?

While it isn’t exactly a huge hardship to have to produce our bank cards when we want to pay for a product, the convenience of using a smartphone is something that will quickly become apparent. At I/O the service was shown to be a simple case of placing your phone on a till point and unlocking it to pay. No numbers to enter, no apps to launch, just unlocking the handset. Adding new bank cards was also a case of tapping one option, although the issuing bank will need to support the service for it to be this simple in real life.

Due to the way the Android Pay service is built - allowing for an API that can be coded into supported apps - the service can also access loyalty card information and include it in each transaction, thus further reducing the need to carry around a purse or wallet. There was even an experimental feature called Hands Free, which allows you to pay without taking your phone out of your pocket.

For Android fans in the UK the sad reality is that we will most likely have to look on enviously as our American cousins purchase things on their phones with gay abandon. Hopefully though, this time the magic will make its way across the ocean, and maybe sooner than you think.



REVIEW:

Samsung Galaxy A3

A smaller version of the very similar Galaxy A5, is Samsung's A3 worth your money?

£249 • samsung.com/uk • ★★★★★

The Galaxy A5 is a nicely built mid-range Android phone, but too expensive given the mediocre components inside. But what about its smaller bother, the Galaxy A3?

Screen

Not everyone wants a phone with a huge screen and the A3 offers a 4.5in qHD Super AMOLED display. To unpack the acronyms, this means it has a resolution

of 960x540 pixels, which is a quarter of the number in a full HD screen (1920x1080).

Many phones have LCD displays, but Super AMOLED is completely different. Like other OLED displays, individual pixels emit light rather than there being a backlight which illuminates an entire LCD screen. This means contrast is better and AMOLED screens also have more vivid colours, in general.

So, given its price the A3 has a relatively low resolution but good-quality screen. Some will think it looks a little blocky or fuzzy if coming from a phone with a higher-resolution screen, but the 244ppi pixel density means it's acceptable.

Design & build

As with the A5, the A3 has an aluminium unibody much like an iPhone. It looks stylish and is slim and lightweight at 6.9mm and just 110g.





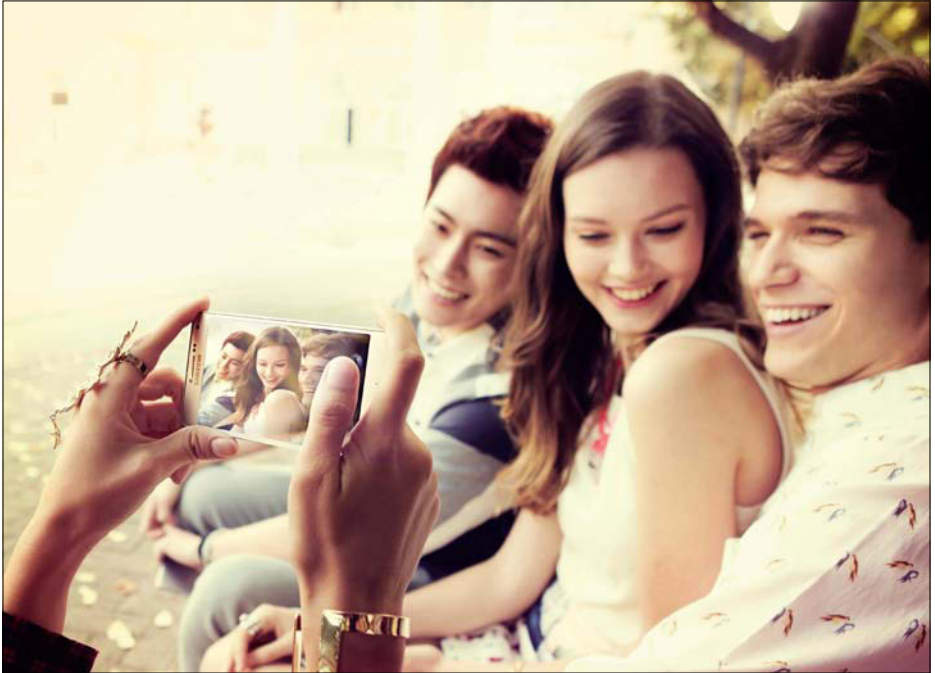
There's a physical home button, with touch-sensitive back and recent buttons either side of it. Micro USB and headphone sockets can be found on the bottom edge and iPhone-style trays hold a nano SIM and up to a 64GB microSD card on the right-hand side.

The sleep/wake button is above the trays, and the volume rocker is on the left. Mounted centrally on the back is a camera that's flanked by an LED flash and – oddly – the main speaker.

You get the same choice of four colours: white, black, gold and silver.

Software

Like the A5, the A3 runs Android KitKat. That's strange given that the new version – Lollipop has



been around for six months now. However, an update to Android 5.0 for both phones is rolling out right now.

Samsung's TouchWiz interface masks most of Android, so the upgrade won't be as noticeable as on a phone running plain Android. It's still worth having Lollipop though for its other features.

Hardware

You might expect the A3 to have the same internals as the A5, but you'd be wrong. Yes, there's the same Snapdragon 410 processor with the Adreno 306 GPU but you get only 1.5GB of RAM instead of 2GB and only an 8Mp camera at the rear instead of 13Mp. Wi-Fi is single-band in the A3 so unlike the A5 it

won't be able to connect to 802.11n routers on 5GHz. It's a non-issue for most people, of course.

The front camera is the same at 5Mp, and there's Bluetooth 4.0, GPS and NFC. There's also 4G LTE support as well as 3G. The A3 is one of few phones with built-in ANT+ support which could be useful if you have any ANT+ fitness gadgets.

Performance

Unsurprisingly, the A3 is more or less exactly as fast as the A5. In our tests it returned roughly the same scores and in general day-to-day used proved fast enough. The problem is that it's not really good enough for the price: you can buy the Motorola Moto E for just £109, which has the same processor, supports 4G and has basically the same screen size and resolution.

The battery is rated at 1900mAh which is quite a lot less capacity than the 2300mAh cell in the Galaxy A5. In general use though, we found the A3 would last a full day with no problems. There's the same



Ultra Power Saving mode as the A5, which extends standby time for over a day from just 10 percent.

Cameras

One area where the Moto E 4G shows its budget nature is the plastic body. But the low-resolution cameras also let it down.

In this respect the Galaxy A3 is much better. Photos have a decent amount of detail and are sharp. Don't expect quality to rival the iPhone 6's 8Mp camera, but snaps are respectable enough to share with family and online.

Bear in mind that both cameras default to a 16:9 aspect ratio which means they take lower resolution





photos (6Mp rear, 3.7Mp front) unless you change the settings to use their native 4:3 aspect ratios.

The front camera defaults to selfie mode, which itself automatically retouches your face giving a strange plastic look. With this disabled, photos from the front camera are very good. Along with the handy options for automatically taking selfies when holding up your palm and a wide-selfie mode, the A3 is a good choice if you take a lot of selfies.

Verdict

Samsung's RRP is £249, but you can buy the Galaxy A3 SIM-free for a little under £200 if you search around online. If you do want it on contract, there should be no up-front cost.

But as we've said, it's possible to get a phone with similar specifications for a lot less, so it's hard to justify spending the extra on the A3 for its cameras or even Samsung's software.



REVIEW:

Sony Xperia M4 Aqua

We take a look at this mid-range smartphone with premium features

£230 • sony.co.uk • ★★★★★☆

The Xperia M4 Aqua is a follow-up to the M2 Aqua, which also had a non-waterproof version. There was no Xperia M3, which is a little confusing, but let's move on regardless.

Although we initially thought the M4 Aqua would be cheaper than the HTC One mini 2 but more expensive than the impressive Honor 6, it's actually cheaper than both at £230, and with similar specs to the more expensive Samsung Galaxy A5.

This price puts it in that awkward mid-range bracket where cheaper phones often have comparable specs and older flagships are only a little bit more expensive but have more to offer.

Design & build

One of the best things about the M4 Aqua is that it doesn't look or feel like a mid-range smartphone. You could easily confuse this with the Xperia Z3, since it has all the same style and design traits. You do notice the plastic (rather than metal) edging when holding it, and the glass rear cover doesn't sit entirely flush with the edge at the top and bottom. Neither are big issues and the phone does a great job of pulling off the premium look at half the price.

With the M2 Aqua, Sony brought the dust- and waterproofing that was previously reserved for the high-end Z range to a cheaper smartphone. It's got an IP68 rating - the highest available - and its Micro-





USB port no longer requires a fiddly flap to keep the internals dry. There are separate flaps for the SIM slot (Nano SIM) and SD card slot.

We like the size of the M4 Aqua: it's not too small, and not overly large. It will feel comfortable to most users and the Xperia M4 Aqua is very thin and light for a mid-range phone at 7.3 mm and 136g. It is available in black, white, silver and coral.

Hardware & performance

This is Sony's first smartphone with a Qualcomm Snapdragon 615 octa-core (quad-core 1.5GHz Cortex-A53 & quad-core 1GHz Cortex-A53) 64-bit processor. There's also 2GB of RAM, 8GB of internal storage and a microSD card slot (up to 128GB). That's not at all bad for the asking price.

Performance is perfectly good for a phone of the this price. It's smooth most of the time with only the camera taking a bit of time to load upon first use.

	Geekbench 3 (multi-core)	GFXBench T-Rex	GFXBench Manhattan	SunSpider
M4 Aqua	2344	25fps	12fps	1294ms
Galaxy A5	1476	9fps	4fps	735ms
Honor 6	3103	17fps	9fps	828ms

The Xperia M4 Aqua outpaces the pricier Galaxy A5 in three of our four benchmark tests, and beats the Honor 6 in the graphics departments with its lower-resolution display. None of the results are particularly impressive, but there's no issue with performance here.

The screen has jumped from 4.8in with a quarter-HD resolution to a larger 5in IPS display with a 720p HD resolution. You're getting a decent screen for a mid-range smartphone with a pixel density of 294ppi. There's good colour reproduction, brightness and viewing angles, too. If full-HD is a must look to the Honor 6.





Features such as wireless charging, an IR blaster and a fingerprint scanner are not surprisingly missing. Sony primarily focuses on photography, battery life and a waterproof design. There is NFC, Wi-Fi and Bluetooth 4.1 onboard, though.

As per usual on Sony phones, the battery is hidden away under the shiny exterior and you can't access it. Although there's no wireless charging, keeping the Xperia M4 Aqua topped up is now much easier thanks to that waterproof USB port. Sony touts a two-day battery life, as it does with premium Z range devices, and we've found this to be accurate.

The combination of a Snapdragon 615 processor and a 720p display works out well for energy efficiency. There's also Sony's Stamina and Ultra Stamina modes if you want to push things further.

Mid-range smartphones tend to scrimp on photography, but the Sony Xperia M4 Aqua has

a 13Mp rear facing camera with Sony's Exmor RS sensor and a 5Mp wide-angle lens at the front for selfies. Sony is one of the only smartphone makers still offering a dedicated physical button for the camera and long may it continue. You can launch the camera at any time, half-press for focus and fully press to activate the shutter.

Like many smartphone cameras, you don't get all 13Mp as standard because it's set to shoot in 16:9 to match the screen. You'll get 9Mp unless you switch to 4:3. The camera shoots at up to full-HD, so if you want 4K video you'll need an Xperia Z.

We've found the cameras able to provide decent-quality results with the Superior Auto Mode handling most situations well, but there is a Manual mode, plus HDR and various camera apps such as Sweep Panorama, Sound Photo and AR fun. Although the Xperia M4 Aqua will take decent snaps for sharing



on the web, it can take a little while to properly focus on a subject, which isn't ideal when shooting moving objects such as children or pets.

Software

The M4 Aqua runs Android 5.0 Lollipop with Sony's own user interface. It uses many stock Android elements, including the recent apps menu and drop-down notification bar. Sony has kept its floating widgets, including a calculator, and these are accessible via recent apps. You can also select which Quick Settings you want, which is not a part of stock Lollipop.

We found the software to be smooth during our time and we like the fact Sony hasn't gone mad with customisations. This means there's little to talk about beyond the usual selection of nice wallpapers and widgets - although you can download Themes which change the look and feel of the interface.

As per usual, Sony pre-loads its own apps such as Walkman and PlayStation, but you'll have to opt for a Z2 or Z3 handset if you want features like High-Res audio support and PS4 Remote Play. There are a number of other preloaded apps, too, including Vine, AVG, OfficeSuite, Sketch, TV SideView.

Verdict

The mid-range smartphone market is always tricky, especially with budget devices getting so good. If you are looking for something around this price, the Sony Xperia M4 Aqua is a solid choice although the Honor 6 is worth a look for extra features. It offers flagship-like design, a great camera and a user-friendly Android Lollipop interface.



REVIEW:

EE Harrier

Superb-value phone with 4G and a full-HD screen under £200, the EE Harrier will suit lefties down to the ground

£199 / from £21.99/month • ee.co.uk • ★★★★★☆

With 4G connectivity and a large full-HD screen under £200 the EE Harrier is excellent value. Nevertheless, it's difficult to get excited about this smartphone. Find out why in our EE Harrier review.

Sold exclusively in the UK through EE, the Harrier is available free on contracts from £21.99 per month, for which you'll receive 500 minutes, 500MB of data and unlimited texts. It's also on PAYG at £199.



The fact the Harrier is available on EE's 4G network is exciting not only because it's fast, but because later this year the phone will also benefit from EE's Wi-Fi Calling service. This eliminates mobile signal problems by allowing you to route calls and texts over Wi-Fi, without you even realising it's happening. It's just a shame Wi-Fi Calling wasn't available to the EE Harrier at launch.

The Harrier is joined by the cheaper Harrier Mini, which replaces the Kestrel, another excellent value 4G phone from EE. But the Harrier is a completely different bird to the Mini, and while they look the same they have a very different squawk.

The Harrier's larger 5.2in screen is a key selling point. This IPS panel is very bright with realistic colours and strong viewing angles. It's usefully large without bordering on phablet territory, and reasonably slim bezels and a slightly curved rear mean the phone still feels good in the hand.

More importantly, though, this is a full-HD (1920x1080, 424ppi) panel, which means it's very clear and an ideal display for watching videos and viewing photos. Full-HD is still far from standard for a cheap 4G phone.

The Harrier's got bigger wings than the Mini, too, with an octa-core Snapdragon 615 chip clocked at 1.5GHz, a generous 2GB of RAM, 16GB of storage (plus microSD support), a 2,500mAh battery and a 13Mp rear camera. Performance *should* be good.

Trouble is, it's not. While the Harrier is a capable smartphone and will be fine for many people in daily use, it's not the benchmark results but the amount of time we were left hanging around when trying to do just about anything that irked us most in using this phone. In launching apps or even just waking the screen we found ourselves waiting several seconds for the Harrier to respond.





For the amount of time you were waiting for the screen to turn on, you kind of feel as though the Harrier could have made more of an effort, too. (Or less.) You get a vanilla implementation of Lollipop, and then about three inches of bloatware slapped on top. It's immediately obvious, with Lookout and Deezer shortcuts and a massive Amazon widget staring back at you from the home screen. After installing our benchmarks less than half the storage space was available.

The design could do with a little something else, too. There's nothing exactly 'wrong' with the Harrier's looks, but it's very functional, and boring. EE has tried to spice things up with a brushed-metal-effect rear cover, silver EE logo and gold camera surround, but we're not fooled: this is still very much a plastic smartphone, and it feels like one.

So while there's lots to love about the EE Harrier, there are also a few things we definitely don't love.

Price & UK availability

For the money the Harrier is a good deal. Most £200 phones will come with lower-resolution and potentially smaller screens, and 4G is not a given at this price point. EE clearly has some deals in place to help it lower the cost, and you're unable to remove the Deezer, Amazon, Lookout and other apps preinstalled on this phone.

The EE Harrier is available now, in-store at £199 or free on contracts from £21.99 per month. At this price you'll receive unlimited texts, 500 minutes and 500MB of data. Once Wi-Fi Calling becomes available for the Harrier that will also be included in your package.

Design & build

At this price you really can't expect a premium build. On the plus side the bezels are extremely thin, the phone is reasonably slim for a budget model and



also lightweight, and the 5.2in full-HD screen is fantastic under £200.

With an IPS display, the EE Harrier offers realistic screen colours, decent viewing angles and it's usefully bright. At 5.2in - large but not too large - it's also a great fit for watching movies and viewing photos, which isn't often something we can say about phones at this price point. (Gaming, not so much, but casual games will play fine on the Harrier.)

EE has made an effort to spruce things up with a brushed-metal-effect rear (it's still plastic) and a gold camera surround; as an own-brand phone you'll also find a silver EE logo on the back cover. The slightly curved rear and rounded corners make the EE Harrier fit naturally in the hand, too.

But a few things give away this phone's mid-range price. First and foremost, it's entirely plastic, and that brushed-metal-effect rear does little to conceal the fact. The removable cover adds to this cheap feel, with the Harrier creaking a little in use. Given that the battery is not removable, we'd have preferred to





have seen a side-loading tray for the Micro-SIM and microSD card, and a fixed rear.

The button placement is bizarre. Unusually, the EE Harrier is far more comfortable to use in the left hand than it is in the right. Held in your left hand the thumb falls naturally over the power button and fingers over the volume rocker; held in the right hand the distance between the two is simply too great, and all the steps EE has taken to make the phone comfortable to use in one hand quickly become forgotten as you struggle to adopt the awkward hand contortions necessary to operate the Harrier. Sadly, for EE, this reviewer is right-handed. But lefties will love it.

Hardware & performance

The EE Harrier is equipped with a 1.5GHz Qualcomm Snapdragon 615 octa-core processor, 2GB of RAM and 16GB storage, which can be expanded via a

microSD slot - and you'll want to do so. Having installed our benchmarks less than half the capacity was available (and they really aren't that big). A 2500mAh non-removable battery keeps it all going.

That sounds like a reasonable specification for a mid-range phone, but in our experience with the EE Harrier we found it would take a second or two to think before doing whatever you had asked of it, whether that was launching an app or opening the Settings menu. Remember, though, that this is a £200 phone. We're used to reviewing super-fast handsets such as the Samsung Galaxy S6, which cost three times the price, and what seems like an interminable wait to us an average user wouldn't batter an eyelid at. For that reason we also measure performance using several benchmarks.

In our benchmarking of the EE Harrier we found performance similar to that of Chinese phones such as the ZTE Blade S6 and S6 Plus, Doogee F1 Turbo



Mini and Bluboo X6. Some of these phones are significantly cheaper than the Harrier, but while you might save money buying phones from China (the EE Harrier is also made in China, but sold in the UK through EE), you could also get hit with additional customs charges and if you need to return a faulty

“

We found the Harrier would take a second or two to think before doing whatever you had asked of it

”

device you could have trouble. By buying direct from EE you should be able to get any problems sorted relatively quickly and easily.

In Geekbench 3, which measures processor performance, the EE Harrier recorded 640 points single-core, and 2042 multi-core. That makes it a little slower than the ZTE Blade S6 (2420) and S6 Plus (2095), but faster than the Doogee F1 Turbo Mini (1947) and Bluboo X6 (1940). Comparing it to some other phones with which you may be more familiar, it's slower than an LG G2 (2271), but faster than the HTC Desire 816 (1503) and new Moto E 4G (1463). Importantly, it's much faster than EE's previous own-brand 4G phone, the Kestrel, which recorded 1152 points (at half the price, mind).

Next up is SunSpider, which measures JavaScript performance (and in which a lower score is better). We run this benchmark in Chrome to ensure a fair test across phones, and saw 1275ms for the EE Harrier. That places the Harrier very much in



Microsoft Lumia or Windows Phone territory, with the 640 scoring 1201ms, the 735 1217ms, 435 1284ms and 535 1295ms. In comparison to Android phones it's in the Huawei P6/P7 and HTC Desire 610's domain - not amazing, but by no means atrocious (the Sony Xperia Tipo still wins that award with 5781ms).

A new test for us is AnTuTu, in which the EE Harrier recorded 29,154 points. We have few in-house results with which to compare this, but according to other results in the AnTuTu database that makes it faster than the original HTC One (M7), but slower than the Nexus 5 and LG G3.

Graphics performance comes next, for which we use GFXBench 3.1. In the T-Rex test the EE Harrier recorded 15fps, which is slightly faster than the Kestrel (14fps), and on par with the HTC Desire 610, LG G2 mini and Sony Xperia M2. In Manhattan we saw just 6fps, which is the same score we saw from the new Moto E 4G. This phone hasn't been designed with gaming in mind, but you should find it quite capable of handling casual titles.

Lastly we measure battery life performance, and for this we again turn to Geekbench 3.0. As with

AnTuTu, this is a relatively new test to the PC Advisor lab, and we have few scores with which to compare the Harrier's performance. However, of the scores we do have, the EE Harrier turned in by far the worst performance with 1424 points (03:33:20). Even its little brother, the Harrier Mini, performed better, with 2163 points (05:24:10). While you might assume this difference could be put down to the lower-spec hardware on the Mini, the phone that scored the highest in this benchmark was the Samsung Galaxy S6, which has a much higher-resolution screen, significantly faster hardware and only 50mAh extra in the battery department.

With moderate real-world use the Harrier should get you through the day, but expect nothing more beyond that. Smart battery options let the Harrier automatically turn off Wi-Fi and data connectivity when the screen is off. You can set this to occur only between certain 'off-peak' times, such as overnight when you don't want to be disturbed, or to happen all the time. However, if you want people to be able to get hold of you, that's perhaps not the best idea. The Harrier can also show you which apps might be causing excessive battery drain.





Connectivity

A key selling point of this phone is its 4G connectivity. At £100 that's impressive; at £200 it's a nice extra - not all phones at this price have it, but neither is it a surprise, and especially not in an own-brand EE handset.

One of the perks of buying an EE phone, though, is Wi-Fi Calling. This is not yet available to the Harrier, but it will be later this year. Wi-Fi Calling is a god-send if you often find yourself without mobile signal, allowing the Harrier to route your calls and texts over a Wi-Fi- rather than mobile network. You won't even notice the difference, and the minutes and texts you use simply come out of your monthly allowance.

In other respects all the usual connectivity bases are covered. There's 802.11b/g/n Wi-Fi, Bluetooth 4.0 and NFC but, unlike many Chinese-made phones, the Harrier is not dual-SIM.

Cameras

On paper, the 13Mp camera fixed to the rear of the EE Harrier is excellent. It has an LED flash, and a gold camera surround makes it all seem a little bit

special. It can capture 1080p (full-HD) video, and there's also a 2Mp selfie/Skype camera at the front.

Very few camera controls are available, but you do get smile-, voice- and touch-activated capture, plus a countdown timer. You can select Auto, Night or Panorama modes, while HDR is on or off and no real-time filters are available.

The results, as you can see in our test shots below, aren't bad. But you'll want to switch on HDR (as seen in the second shot), and even then detail

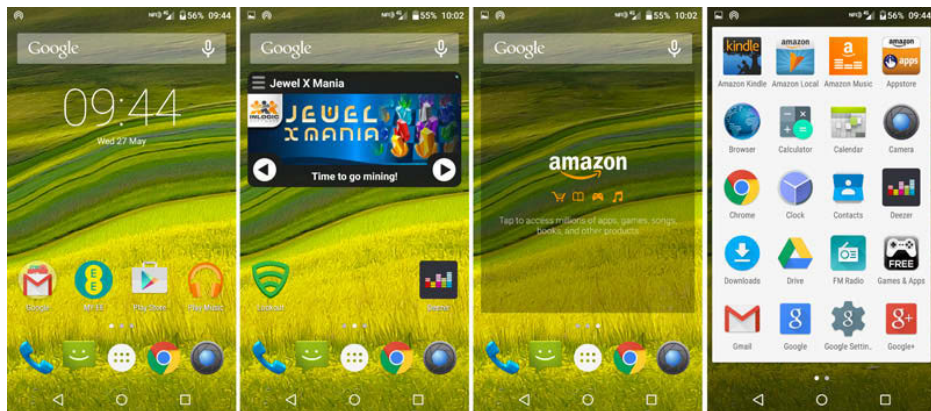


is lacking. Colours are natural, though, and for the money the results are acceptable.

We also ran a video test using the primary camera, but found the footage quite jerky.

Software

The EE Harrier runs a very plain implementation of Android Lollipop, and even uses the Nexus



launcher. However, there is a lot of bloatware slapped on top, and none of it can be uninstalled. Additional extras include Lookout, My EE, Amazon Kindle, Local, Music and Appstore, Deezer and Games & Apps. By the time we had installed our benchmarks, only 7.89GB of the Harrier's 16GB of storage was available.

Verdict

At £200 EE's Harrier offers 4G connectivity, a great 5.2in full-HD IPS screen and the promise of Wi-Fi Calling. For many people that will make it an excellent deal. But a number of issues prevented us getting too excited about this smartphone: there's a load of bloatware, relatively sluggish performance, unremarkable battery life, some awkwardly placed buttons, a plastic build, and the camera performance isn't great.



REVIEW:

Huawei P8

Huawei's latest flagship is gorgeous, but not all is as attractive as it seems

499 Euro • huawei.com • ★★★★★☆

Huawei is aiming to take on the big guns of the smartphone world with the simply named Huawei P8 - the Ascend part is now gone.

We've been testing the P8 for a few weeks and here's our in-depth Huawei P8 review.

We've been impressed by Huawei's previous flagship phones, namely the Ascend P6 and Ascend P7, so we've been looking forward to the Huawei P8. But it has some tough competition in the market from the likes of the Samsung Galaxy S6, HTC One M9, iPhone 6, LG G4 and Sony Xperia Z3+.



The Chinese smartphone and tablet maker likes to lure customers with an affordable price, typically undercutting rivals like Google has traditionally done with the Nexus range. The P6 and P7 were both great value for money.

Huawei has priced the P8 from 499 Euro making it, in theory, a fair amount cheaper than its competitors, which typically cost closer to £600. However, UK retailers including Amazon are pricing it at £500, which is higher than we expected considering the EU price tag.

Design & build

Huawei likes doing things wafer-thin and, although the phone got thicker from the P6 to the P7, it's now thinner again at just 6.5 mm. While a svelte phone looks great and seems better on a spec sheet, we've found some phones to be too thin becoming less ergonomic to hold. The P8 is extremely thin but luckily not so much that it's uncomfortable.

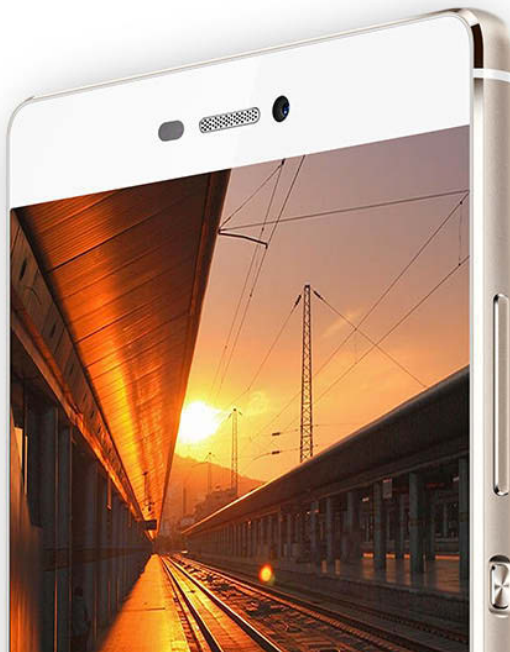
We like the mostly metal body and the bevelled edges make it more ergonomic in the hand. It's a shame that the back is tainted by legal information and the front looks strangely plain with no logo embossed anywhere.

The slender frame means that it's also very lightweight and a 78.3 percent screen-to-body ratio is impressive. Once again it has similarities

in appearance to the iPhone 6 and now Samsung Galaxy S6 with the metal frame, although it's more symmetrical than before as there's no rounded bottom edge. The square shape makes it look similar to the Sony Xperia Z3+, so it's got a little bit of all three in appearance.

The P8 is bigger than its predecessor, and although it's almost the same height and width as the Galaxy S6, it gives the impression of being bigger because of the squarer corners.

The Huawei P8 will be available in four colours: carbon black, titanium grey, mystic champagne and prestige gold. These are split into standard and premium models so the 64GB model comes in only black or prestige gold, while the 16GB is grey or mystic champagne. It's not fully waterproof, but it is spill-resistant thanks to nano-coating.





In an interesting move, Huawei will offer an E Ink cover that sits on top of the P8 to turn it into a traditional e-reader. This means, in a roundabout way, the P8 rivals the YotaPhone 2. We've not seen this cover in the flesh so can't comment on it yet.

Hardware & performance

Following on from the previous generations, Huawei has once again increased the screen size for the P8. It's now 5.2in compared to 5in and matches the Sony Xperia Z3. It's still an IPS screen and the resolution remains at full-HD 1080p, creating a pixel density of 424ppi. If this isn't big enough, the Huawei P8 max is a whopping 6.8in and in essence a 7in tablet. The screen is decent with nice colour reproduction and viewing angles, although unusable at the lower end of the brightness slider.

As per the rumour mill, Huawei has installed a Kirin 935 octa-core processor clocked at 2GHz and

	Geekbench 3 (multi-core)	GFXBench T-Rex	GFXBench Manhattan	SunSpider
Huawei P8	3405	15fps	10fps	964ms
Huawei P7	1870	12fps	Not tested	1296ms
Galaxy S6	4438	30fps	14fps	462ms
HTC One M9	3778	50fps	24fps	867ms
iPhone 6	2794	49fps	26fps	351ms

1.5GHz. There's also 3GB of RAM and either 16- or 64GB of storage, which matches top-end Android phones. You'll be pleased to know that Huawei has kept the microSD card slot, and this also doubles up as a second SIM card slot so the P8 is dual-SIM.

Performance seemed smooth during a quick play, but after testing we aren't overly happy with the P8 on this front. While the phone is smooth in general, there are points where it lags and really shouldn't. For example, simply tapping an email to open it and scrolling within the Play store is jerky. Huawei





says its 100 percent better than the P7 in GPU performance and 80 percent in CPU performance, but our benchmark results aren't the most glowing – particularly on the graphics side of things, which is why we suspect there is a perceivable lag to the interface at times.

Battery performance should be 1.5 days with normal usage, which isn't massively impressive but the battery is only 2600mAh as the phone is so thin. Unfortunately, we've found the P8 to last only a day on a full charge. In our battery test the P8 lasted five hours and 30 minutes with a score of 3296. This isn't awful but isn't impressive either, with the Galaxy S6 managing six hours and 53 minutes and 4136 points.

We've also found it loses almost all its power from fully charged while sitting not being used over night or during the day. We're hoping this is just a problem with our particular sample and will be testing another to make sure.

On the camera front, Huawei has stuck with a 13Mp rear camera and an 8Mp front camera. Lining

up with all the teasers leading up to the launch about light, the P8 is touted to capture better results in low-light conditions. Huawei touts best-in-class optical image stabilisation and a DSLR-level independent image signal processor.

The cameras are by far the best features of the Huawei P8 with excellent results all-round: close-ups, landscape and in low light. The phone has an iOS-style camera app, which is easy enough to use, but you'll have to head into the settings to use the full resolution of the main camera, which by default shoots at 10Mp and 16:9. It also records video at 720p, despite being capable of full-HD - a lack of 4K recording is why you might want to opt for a more expensive rival.



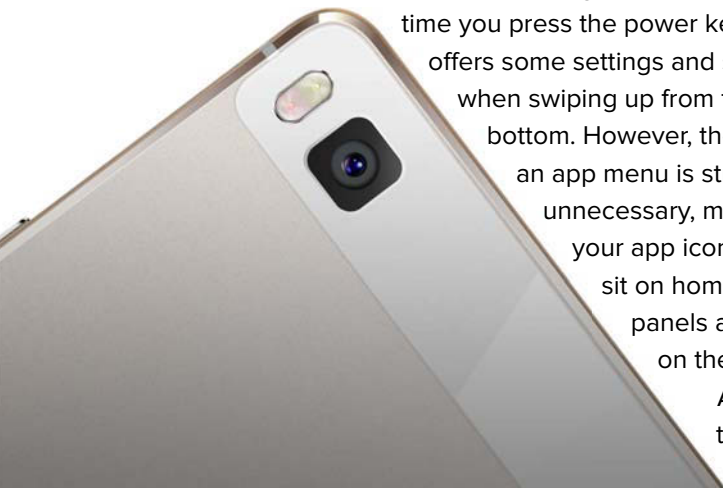
We don't like the almost pointless Beauty mode, which simply softens the image so you don't look like the same person any more, but the Time-lapse and Light painting modes offer a bit of fun when the right situation arrives. All focus allows you to re-focus a shot after it's been taken but didn't work as well as other phones with this type of mode. What's a little confusing is being able to switch between a few modes with a simple swipe while others, including the arguably more useful HDR, are tucked away in the menu.

Software

As you'd expect from a new 2015 smartphone, the P8 comes with Android 5.0 Lollipop preloaded and Huawei is sticking with its own Emotion UI, which it places over the top. It's similar to previous versions, which is both good and bad.

We like the amount of customisation, which includes themes and the ability to even change home screen transition animations. There's also a nice lockscreen, which changes the photo each time you press the power key and offers some settings and shortcuts when swiping up from the bottom. However, the lack of an app menu is strange and unnecessary, meaning all your app icons must sit on home screen panels as they do on the iPhone.

As with the P7, the





Phone Manager app can be really useful if you get to know it, offering you advice on which power and memory-hungry apps to shut down. You can also control notifications, clean storage and enable things like a harassment filter.

The drop-down notification bar works well, to an extent, and we like the way it takes you to quick settings when there are no notifications to display. However, it doesn't group notifications properly, so it will let you know you have x emails, then proceed to show you each one rather than giving you the option to expand that initial notification.

There are a number of background features you're not supposed to notice, such as Signal+ and Wi-Fi+, which aim to automatically give you the best experience by switching between antennae and Wi-Fi. There's also a smart international dialler so you don't even need to put in the country code.



A strange feature called Knuckle Sense allows you to double-tap the screen to take a screenshot, which you can then edit, and you can also draw around the section of the screen you want to screenshot if you don't want the whole thing. This is handy at times, but the phone activates this strange drawing mode at really random times in normal use. We've tried to turn off this feature off but can't find a setting for it. It would be fine if you could choose not to use it, but the screen often thinks you're using a knuckle when you're not. This affects the entire experience of using the P8 as you never know when it's going to get in the way of what you're doing.

Verdict

The Huawei P8 has excellent design and build and comes at a price lower than its flagship rivals. On the whole hardware is decent too, particularly in the photography department. However, poor performance and buggy software taint the experience and make the P8 difficult to recommend.



REVIEW:

UMI Hammer

Almost indestructible and with easily swappable ROMs, this 4G phone is a great buy at under £100

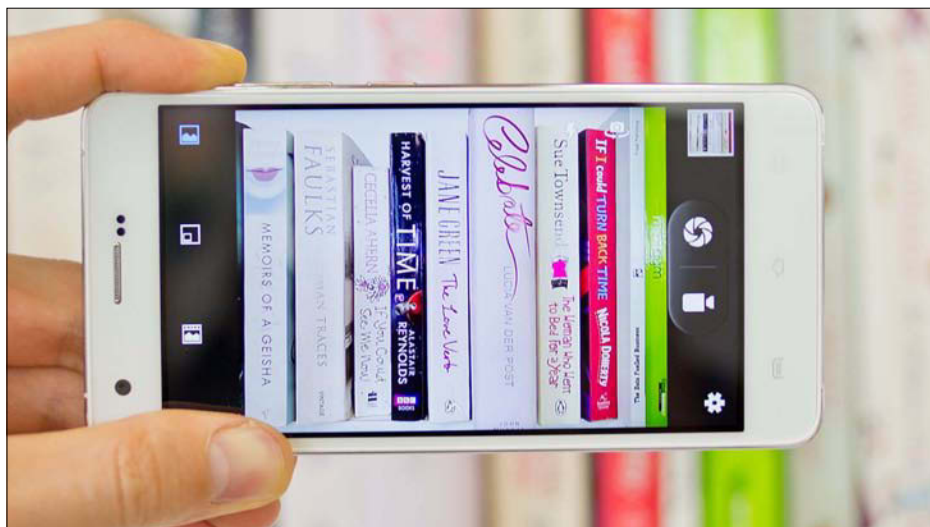
£93.03 (+ import duty) • geekbuying.com • ★★★★★☆

With the Hammer, UMI blends an aviation-grade aluminium alloy frame and a tough polycarbonate shell with a 5in dual-glass IPS and Gorilla Glass HD display to create a virtually unbreakable device that still manages to be both good looking and lightweight. You might not intend to hammer nails with this smartphone, but you could. And you could use it to crack nuts or even run it over in your car, as Geekbuying has demonstrated.

But there's more to the UMI Hammer than its tough design. In our benchmarks, the 1.5GHz MediaTek quad-core processor, 2GB of RAM and ARM Mali-T760 GPU powered the UMI Hammer to some decent mid-range results, with an AnTuTu score of 32,506 putting it in the same class as the Google Nexus 5, LG G3 and HTC One. Not bad for a phone that costs just £93 from Geekbuying.

Add to that its 4G connectivity, a 13Mp rear camera with dual-LED flash, built-in dual-SIM and microSD support, and a removable battery, and the UMI Hammer is quite a deal.

What's really interesting about the Hammer, though, is its software. Out of the box the UMI runs Android 4.4 KitKat, and has a slew of both useful and customisable smart gestures. With support for Rootjoy, though, things get a lot more interesting. Rootjoy is a program that you download to your Windows PC or laptop, then plug in your phone to





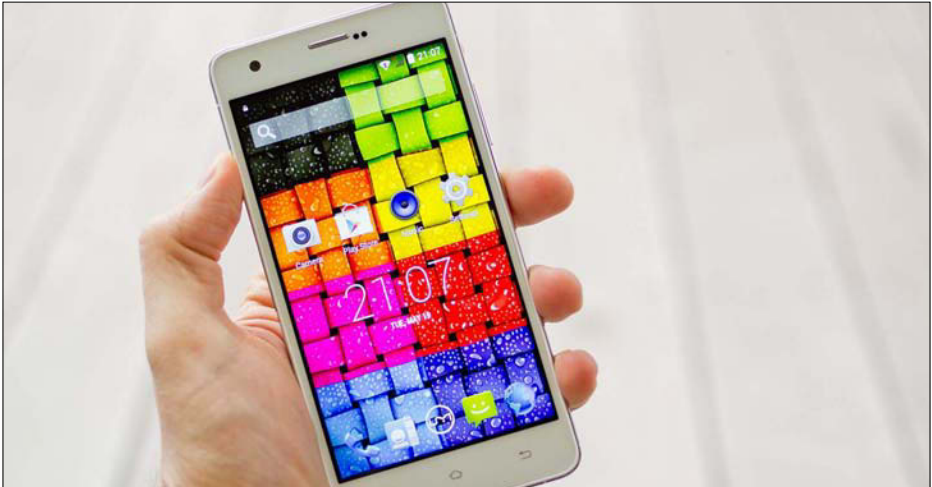
quickly install updates, flash a new ROM of your choice (including Lollipop and MIUI6), install a custom UI or back up your data.

With the UMI Hammer you get all the connectivity options you expect, including OTG support, 802.11n Wi-Fi and Bluetooth 4.0. With a separate GPS receiver installed efficiency is said to be improved by 35 percent, getting around the signal problems often experienced by metal-chassis phones.

Design & build

As the name suggests, UMI's Hammer is a seriously tough smartphone, and yet it's much better looking than most rugged phones you can buy. UMI has taken a super-strong aviation-grade metal chassis and fixed to it an also-tough polycarbonate shell and dual-glass display.

That dual-glass screen comprises a 5in IPS panel with an HD resolution of 1280x720 pixels and a Gorilla Glass protective top layer. To give you an idea of its clarity, the Hammer's 294ppi pixel density falls just short of the 326ppi of the iPhone 6. It's very bright and very colourful, with excellent viewing angles. Further protection is afforded by the slight lip to the screen bezel.



Available in black or white (and supplied to us in white), the UMI Hammer is a nice-looking phone. The 13Mp camera juts awkwardly at the rear, but this is becoming increasingly common in today's ever-thinner smartphones. The Hammer is a super-slim 7.9mm, and despite its tough chassis just 159g.

With a 5in screen and slim bezels it sits nicely in a single hand, aided by the slight curve to the Hammer's rear. UMI refers to this polycarbonate cover as being as smooth as a baby's bottom; it's not the first thing that springs to mind, but it is indeed smooth to the touch. Pleasingly, it's also removable, and gives access to an also-removable battery, dual SIM slots and a microSD card slot.

The volume rocker and power button are well-positioned for use with the right thumb, but the rear-facing speaker is muffled by the palm. Three Android-standard touch-sensitive buttons lie below the screen, while you'll find a micro-USB charging port and 3.5mm headphone jack on the top edge.

Hardware & performance

At this price you shouldn't expect top-end hardware, but you'll be pleasantly surprised by what you do get for just £93 - and that is middle-of-the-road performance at a budget price. Inside the UMI Hammer is a 1.5GHz MediaTek MTK6732 chip, a 64-bit quad-core processor based on the ARM Cortex-A7. This is paired with 2GB of RAM and 16GB of storage, of which some 12.5GB is available to the user (and, of course, you can add up to 64GB via microSD). ARM Mali-T760 MP2 500MHz graphics complete the package.

As well as our usual benchmarks we ran the UMI Hammer through AnTuTu, a popular Android benchmark that takes into account CPU, RAM and GPU performance, as well as the user experience. In this test the Hammer recorded 32506 points, putting it in the same class as 2013/2014 flagships including the Google Nexus 5, LG G3 and HTC One.



In Geekbench 3 we saw 728 points in the single-core test and 2203 multi-core, showing better single-core performance but slightly lower multi-core performance than the other UMI phone we've reviewed, the octa-core UMI Zero. The Hammer took the lead in SunSpider and GFXBench, however, with 18fps recorded in T-Rex, 8fps in Manhattan and 1020ms in Google Chrome for JavaScript performance (865ms when tested using the preinstalled browser).

The UMI Hammer is fitted with a 2250mAh removable battery that we expect to offer a full day's usage for most people. UMI claims the Hammer can handle nine hours of 4G internet browsing, 11 hours of video playback, 28 hours 2G call time or 42 hours of music playback.





Connectivity

The UMI Hammer covers most bases connectivity-wise, with support for 802.11b/g/n Wi-Fi networks and Bluetooth 4.0. It also supports OTG, but rather than NFC you get MediaTek's HotKnot.

Metal-chassis phones often struggle with obtaining a signal, and although the Hammer has a plastic rear cover UMI has opted to install a separate GPS receiver. This means the Hammer supports both GPS and A-GPS, and UMI claims 35 percent better efficiency because of this.

Mobile network coverage is important when buying a phone from overseas, and you should check the UMI Hammer is supported by your UK mobile operator's network. The Hammer operates on GSM 850/900/1800/1900MHz, WCDMA 900/1900/2100MHz and FDD 800/1800/2600MHz.

Not only is it a nice surprise to find 4G connectivity in a phone this cheap, but the UMI Hammer is also a dual-SIM phone, accepting one micro-SIM and one full-size SIM. It operates in dual-standby mode.



Cameras

The UMI Hammer has a 13Mp rear camera with f/2.2 aperture and a dual-LED flash; it can also shoot HD video. In our initial tests at the default settings we found detail was lacking, but by turning on Anti-Shake we got a better picture from our windy seventh-floor London roof terrace. It was only when we switched on HDR that we got a really decent image, though. With HDR on the UMI Hammer shoots pictures to be proud of, with excellent detail and truthful colours. You can see all our test shots with- and without HDR and our test video below.

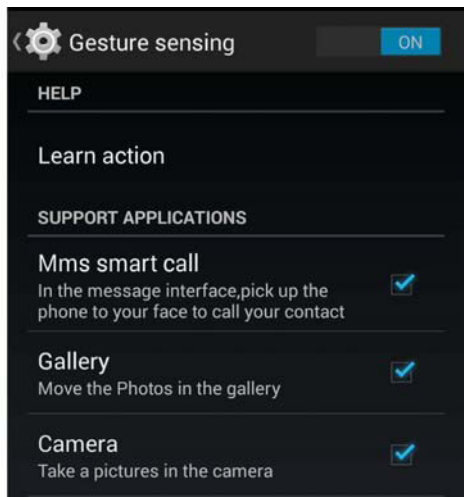
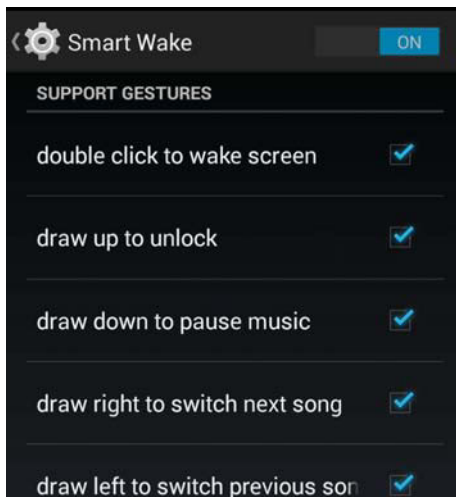
The camera settings require a little bit of getting used to, with options such as Anti-Shake greyed off when you turn on Smile Shot (which we found was

on by default). You can also slide in from the left of the screen to access real-time previews of filters, and configure the camera to take a photo when you say "Capture" or "Cheese".

A 3.2Mp f/2.2 selfie camera is fitted to the front of the Hammer. You can turn on Face Detection and Face Beauty mode, with options to reduce wrinkles and whiten your skin tone. As with the rear camera, real-time previews are available for filters.

Software

As we mentioned in the introduction, the UMI Hammer supports Rootjoy - and that's great news for Android enthusiasts. While the UMI Hammer runs Android 4.4 KitKat out of the box, Rootjoy removes the need to wait for new updates to come to your device and allows you to install a new ROM in a couple of clicks. Rootjoy is a Windows program that you install on your PC or laptop, then plug in the UMI Hammer over USB to access options for



quickly installing updates, flashing a new ROM of your choice (including Android Lollipop and MIUI6), installing a custom UI or backing up important data.

If you decide to stick with KitKat, you'll find a fairly stock implementation with full access to Google Play. If you want Google apps such as YouTube or Gmail simply download them from here.

A few additional apps are preinstalled, including SuperSu, a file manager, notebook, music and video playback apps, SuperCleaner - an optimisation utility - and the WeCal calendar.

Open the Settings menu to access Smart Wake and Gesture sensing menus, with the former including such options as a double-tap to wake the screen and the drawing of alphabetical characters in standby mode to quick-launch apps of your choosing; the latter lets you use gestures to do things like call contacts directly from a text just by putting the UMI Hammer to your face.

Verdict

The UMI Hammer offers fantastic value at £93, with 4G connectivity, a decent HD display and a reassuringly tough build. The camera takes a great shot with HDR turned on, and we particularly like the ease with which you can mess around with custom UIs and install new ROMs. Recommended.





REVIEW:

OnePlus Power Bank

A great companion for the OnePlus One - or any phone - this portable charger will keep it going all day & all night

£13.99 • oneplus.net • ★★★★★☆

Power banks or emergency chargers are becoming popular companion devices for phones (and tablets) that struggle to make it through the day. OnePlus is the latest company to jump on the portable charger bandwagon, and we're pleased that it did.

The OnePlus Power Bank is available to buy from OnePlus' own site (whenever you want, not just on a Tuesday or any of that malarkey), for £13.99.

However, with shipping costs you'll pay £19.48 for the OnePlus 10,000mAh Power Bank in either Sandstone Black or Silk White. That's not bad value for a power bank of this capacity, although it's not the same ball park as the OnePlus One phone.

The OnePlus Power Bank is very nicely designed. Slim and lightweight, it'll feel just like a smartphone when slipped into a pocket. OnePlus fans will appreciate the finish - it's the same material as is found on the rear of the phone itself, rough like a carpet but soft to the touch - and with a matching silver trim these two devices will look great side by side. No carry case is supplied in the box, but it really doesn't feel as though this power bank would require one.

Not that you have to use the OnePlus Power Bank with a OnePlus One phone. There's a Micro-USB cable in the box, which should suit most Android- and Windows Phones, and if you're using an iPhone you simply need to supply your own Lightning cable.

There are no buttons, keeping things simple. A gentle shake activates the four blue LEDs on the right edge, alerting you to how much power remains, while charging is automatic. Attach your phone or tablet and the OnePlus will instantly begin charging it. Once the device's battery is full the OnePlus is supposed to stop pumping out the power, preventing any being wasted. Unfortunately,



we found this wasn't the case with our HTC Desire Eye - it stopped charging, but the OnePlus didn't switch itself off.

Charging is fast, too. With a 10W input and two 10W outputs, you'll probably charge your phone faster from the OnePlus than you would the charger it shipped with, and it'll refill its own battery in around six hours. Do note, though, that 10W is the max power output for the OnePlus Power Bank - if you're using both ports at once just 5W will be available from each, and some tablets - usually iPads - can stubbornly refuse to charge under such conditions.

Our only real gripe is that the OnePlus Power Bank doesn't support passthrough charging, so when both phone and power bank batteries are depleted you'll need to separately refill them. To be fair, though, passthrough charging is a high-end feature that's rarely found at this price.

OnePlus claims an efficiency of "more than 80 percent" (that's good - most power banks average 70 percent, with some energy lost through voltage conversion and heat generated) and says that its 10,000mAh Power Bank will recharge a OnePlus



One three times. Given that the OnePlus One has a battery capacity of 3100mAh, it's unlikely that you actually can achieve three full charges - although you will get close. Unfortunately, we have already given away our OnePlus One as a competition prize and are unable to check this.

As with most power banks, OnePlus says there is a multitude of safety features built into its Power Bank, with safeguards against overcharging, overheating and short circuits.

Verdict

We really like the OnePlus Power Bank. If it weren't for the shipping costs it would offer excellent value at £13.99, and we know OnePlus One fans will adore its design. You don't expect to find high-end features such as an LCD display and passthrough charging at this price, but the shake-activated LED status lights and auto-on functionality are welcome additions. More importantly, though, this power bank will keep any smartphone user going all day, all night and beyond.





APP ALERT:

New Angry Birds out now!

Previously available in only Asia Pacific, Rovio has brought the latest title in its Angry Birds series to the UK

Rovio has unveiled the latest title in its Angry Birds series in the UK. Available since 7 May in Asia Pacific, Angry Birds Fight is now available as a free download to UK users. Grab it now from Google Play or fight.angrybirds.com.

Developed in partnership with KITERETSU Inc in Japan, Angry Birds Fight has already been downloaded 3 million times.

Get ready for battle Japanese-style, says Rovio. Angry Birds Fight mashes up Angry Birds characters with Japanese cultural elements in this match-three puzzler with RPG elements. It's the first title in the

Angry Birds series to properly implement real-time player vs player action.

"Fighters start the game with a race against the clock to match as many panels as possible to power up birds for the fight against other players around the world. They can then equip themselves with the ultimate battle tools to get the edge when they come under attack. It's fight or flight as players can also explore uncharted islands where they face unexpected battles with rogue challengers, and have to battle to stay in the game," says Rovio.

Angry Birds Fight: Characters

Chuck

According to Rovio, Chuck is fast like a ninja, and crazy as a loon. Think fast and Chuck can make your opponent's head spin!



Bomb

Bomb is Angry Birds Fight's demolition specialist. Even he doesn't know how to control his powerful explosion, claims Rovio.



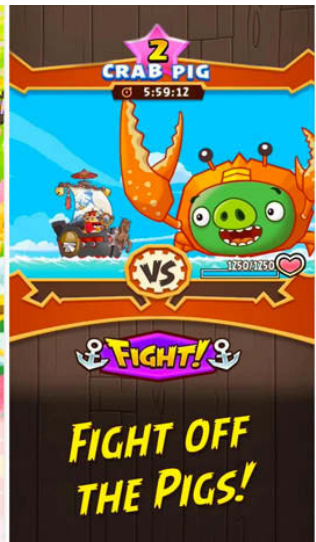
Stella

Stella has it all, brains and beauty. You can use her bubbles to blow away your foes, says Rovio.



Red

Brave, strong and aggressive, Red is leader of the Angry Birds Fight flock. Be aggressive to maximise his fighting power, says Rovio.





Periscope

APP ALERT:

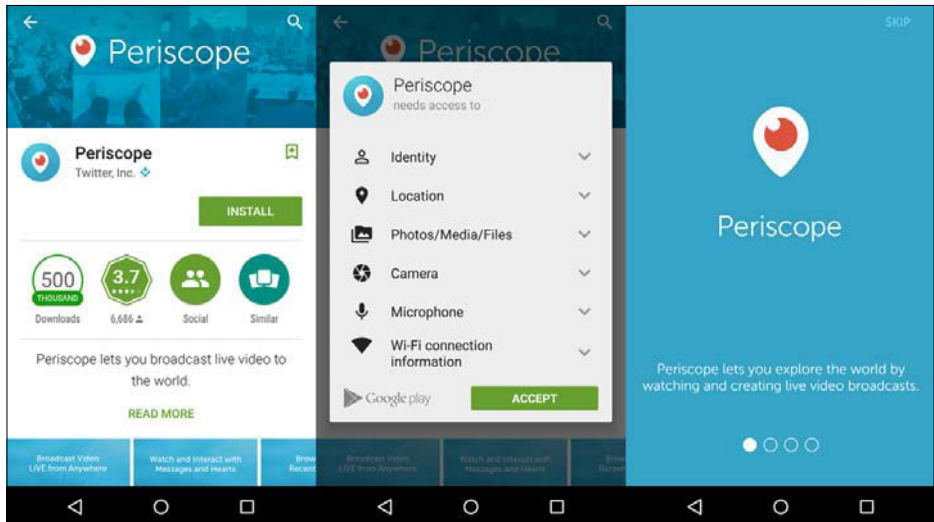
Periscope for Android

How to use Periscope on Android, and why you'd want to

Following its release on iOS back in March, Periscope - the live video broadcast app - is now available for Android users. Owned by Twitter, this new form of social media looks set to take on the likes of Meerkat and bring live streaming into the mainstream. In this feature we'll explain what Periscope is, how to use it, and why you'd want to.

Periscope is Twitter's new live broadcasting app, which allows users to either watch or create videos on their phones which can be watched in real time by others. While YouTube provides a way for video creators to build up a catalogue of well made episodic content, Periscope is very different, in that

everything is instantaneous and you can interact with your audience while the broadcast is going on. Streams are only stored on the servers for 24 hours before being deleted, although you can save them to your device's camera roll if you want to keep them longer and share with friends.

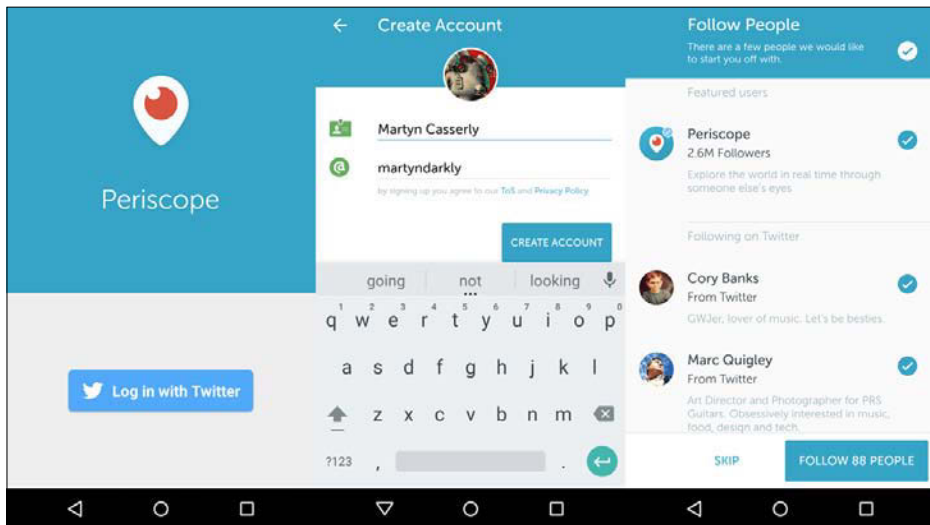


Installing the app

Installation is very easy, as the app can be found in the Google Play store. Simply open the Store app, search for Periscope, then tap on Install. You'll be presented with a lengthy list of app permissions, but this is normal due to the social nature of the app and the fact that it needs access to your camera, microphone, and location for the service. Accept these and the app should install without any more questions.

Setting up your account

As Periscope is a Twitter app you'll need to have a Twitter account to use it. Tap the Log in with Twitter button to get started, then enter your existing account details or create a free account. One of the advantages that the Android app has over its iOS alternative is that you can actually use more than one account if you have them. To set up multiples just tap on the one displayed at the top of the screen and then tap the Add Account button. now you can switch between them whenever you want - great if you want to keep your personal and business Twitter IDs separate.



After authorising your Twitter ID, by tapping Allow, you'll need to also create a username for your Periscope account. When you've done this tap Create Account. Now you'll be shown a list of people you can follow - these will be drawn from who you

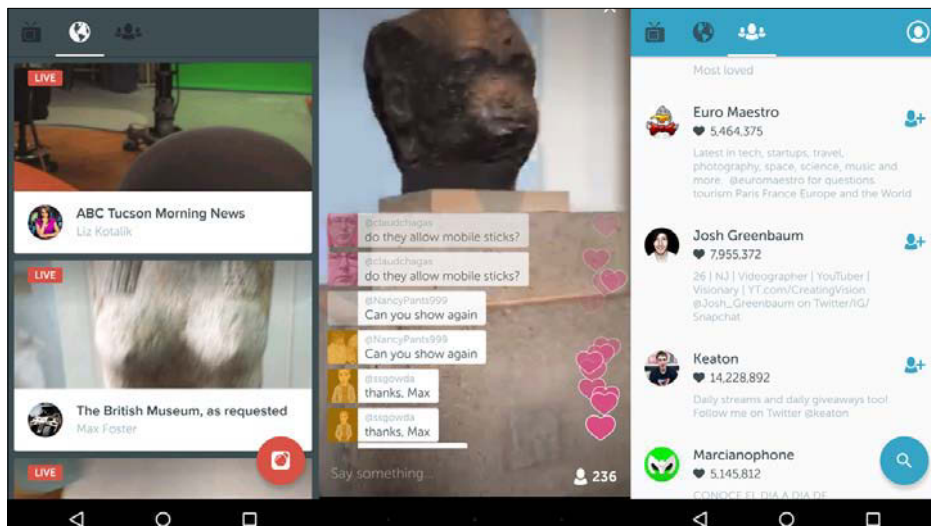
already follow on Twitter. As Periscope is still quite a recent release it would be wise to accept the people the app suggests, this way you'll be guaranteed content or an audience. You can of course thin these out later on.

Using the interface

The main screen of Periscope looks a little like a Tumblr feed, with a scrollable selection of videos you can tap on to watch. Select one and you'll be taken to whichever video is currently being filmed/broadcast live. These can range from someone out in the park, to a newsroom showing behind the scenes footage. The first one we found was of a man conducting a video tour of the British Museum.

In the bottom left hand corner you'll see a scrolling list of comments. To add one yourself tap the Say something... area of the screen and your message will be relayed in real time to the video creator. You could ask them to do something - maybe back up a bit so you can see what they are filming a little better - or pose a question, which they might then respond to.

In the bottom right hand corner of the screen you'll see a stream of hearts scrolling upwards. These are generated by users tapping the screen. Unlike Facebook, where you can like something only once, on Periscope you generate hearts each time you tap the screen. This allows real-time (there's that term again) feedback for the creator, akin to cheers or applause from the audience. With this feedback they can judge with things people are enjoying and which they are not - making the interactive experience hopefully better for everyone. You can



also see the number of people currently watching the stream displayed in the bottom right corner.

Tapping the cross in the top right corner takes you back to the main screen. You'll notice that there are three main icons across the top - a TV, globe, and people. The TV option shows you a list of any of your friends that are currently broadcasting, the globe is the default that appeared when you first loaded the app, showing all the latest streams from around the world, and the People icon is a list of popular users that you can follow by pressing the plus icon of the right hand side.

One other icon remains on the right hand side - the person in a circle. Tap this to see your own profile, how many followers you have, who follows you, and down at the bottom there is the Settings option. In here you'll find controls for notifications which let you know if any of your friends begin broadcasting or shares a saved broadcast. One

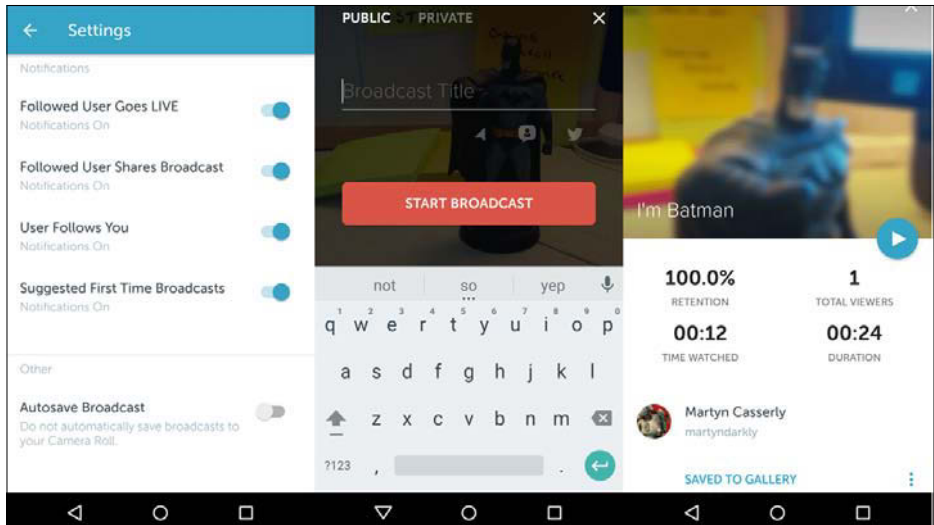
important option to take note of is the Autosave Broadcast control - this ensures that anything you create will also be stored in your camera roll, so you won't lose it when the Periscope servers delete them after 24 hours.

Creating your own live broadcast

Return to either the global or TV feed and you'll notice a red camera icon in the bottom right corner of the screen. This is your record button, which will allow you to start your own live broadcast. Before you begin, remember that video content uses up a lot of data. So if you have a small allowance in your monthly tariff, then it would be best to wait until you find a Wi-Fi hotspot or keep your broadcast short. When you're ready to go tap the camera icon.

First of all you'll need to give your broadcast a title, so that people will know what it's about. Then you can choose whether to make it Public or Private by tapping on the options in the top left corner. Public is exactly as it sounds, while Private means the feed will only be available to a list of people from your contacts that you select. Under the title line you'll see three other icons that can be toggled on or off by tapping them. The first is location (so people will see where you are), tapping the next one means only users who follow you can comment on the stream, and the last one selects whether the broadcast details are posted on Twitter. When you're happy tap Start Broadcast to begin.

Now you'll be live across the globe, and if anyone taps on your broadcast they'll be able to watch what you're doing and comment accordingly. The longer you broadcast the more chance an audience will



find you. The default view is the rear camera on your phone, but to switch to the back camera double tap the screen. Swiping up from the bottom reveals the chat window, so you can type in responses, and swiping down from the top reveals the Stop Broadcast button which you tap to end the stream.

Once you've completed your broadcast you'll see the information about it - length, viewers, retention rate - and, if you have the option selected, that it's been saved to your camera roll. The three dots that follow this last stat opens up a menu where you can select to Remove Replay (meaning that the stream will no longer be available to view for the 24-hours), Delete Broadcast (which removes it completely), and Hide Chat (which stops any comments being displayed). That's it. Periscope in a nutshell. If you return to the TV icon you'll see your video listed, but come tomorrow it will be gone. So, enjoy the experience while it lasts.

**iPad & iPhone User magazine is the
essential guide for all things iOS-related**
DOWNLOAD THE LATEST ISSUE TODAY

iPad & iPhone ISSUE 96 user

GET READY FOR

iPhone 6s

Your questions answered
about Apple's **NEW** iPhone!

+FIRST LOOK
iOS 8.4 beta 3

**DIGITAL
EDITION ON
ANDROID
& iOS**

tinyurl.com/kg776m8

PLUS:



**Weirdest iPhone
concept designs**

